

Al58 maize derivatives in most of the tripsacoid features of the pistillate spikelet, such as up-curved lower glume and inclined rachilla (teosinte component 4 modification), elongated rachis internodes (teosinte component 9 modification), whereas, the southern dents do not show many of the obvious effects of the teosinte introgressed components mentioned above. However, they do possess highly indurated and extremely thick rachis segments--the tripsacoid characters which are probably imparted to a certain extent by teosinte components 3 and probably 4+. Most of the inbreds fall within the two extremes of flints and dents giving further evidence that Corn Belt maize originated by the hybridization of northern flints and southern dents. It is interesting that some of the inbreds (C103, 099, 526, F14), although having different genetic background than the experimental teosinte introgressed Al58 derivatives previously reported (News Letter, 37), still compare closely for spikelet characteristics with the Al58-derivatives modified by individual teosinte components Florida 4+ and Nobogame 4B. Other inbreds, 695, 029, 291, and Oh 43, for example, showed the dilute effects similar to those expected from the introduction of more than one teosinte component. Still others, like 334, appeared to be even more tripsacoid than any of the teosinte introgressed derivatives of Al58 or the flint and dent varieties.

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2. Tripsacoid characters and combining ability.

If flints and dents have different types of introgressed components and if these components are heterotic (Sehgal, 1963), it would be logical to expect the inbreds with high combining ability to possess tripsacoid components from both blint and dent varieties and therefore to be probably more tripsacoid than either flints or dents. Examination of the internal cob morphology of a number of inbreds shows that this is true for many of them (C103, 705, 336, 385) and especially so for inbred 334. Inbred 334 possesses numerous tripsacoid features (strongly inclined, short and thick rachilla; extremely horny and highly indurated rachis segment) and appears to be more tripsacoid than the other inbreds studied or the experimental introgressed types. This is also one of the best general combiners in our cultures.

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3. Recovery of extreme segregates.

If Corn Belt maize possesses various degrees of teosinte germ plasm in its genetic constitution as most of the available evidence suggests, then it should be possible to recover segregates comparable to the experimentally introgressed teosinte derivatives by inbreeding the O.P. varieties. Such segregates, although not very frequent, do sometimes appear in F_2 and subsequent generations and have been observed in inbred progeny of the varieties Krug, Lancaster, and Midland. Some of the extreme segregates have many tripsacoid features of both plant and ear, and a few even exhibited a tendency toward single spikelets.

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